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## EDITORIAL



## THE YEAR AHEAD

I feel it is my duty as Federal President to give you a brief account of the work before the Federal Executive for the next twelve months. I would first like to inform you that your Executive are all men with wide administrative experience in public, civil and service affairs and you have our collective assurance that we shall do our utmost during the year to further the interests of the Institute as a whole. All members of the W.I.A. should be well aware that in both the Federal and Divisional spheres, our organisation is administered by volunteers. The corollary is that these men must give first attention to their civil and public vocations. It is then important that what time is available for our hobby is used to the best advantage and not frittered away in fruitless argument or internecine strife. We should apply ourselves with diligence and zeal to the tasks in hand and endeavour to be mutually helpful so that profit and pleasure may be the eventual result. This has been and will continue to be, the "motif prime" of your Executive.

There are many large problems facing your Executive. Too often in the past, though not from choice, it has been "bogged down" with administrative detail when the time should be devoted to more important and more urgent problems. I suggest Divisions can relieve quite a lot of this burden by familiarising themselves with the contents of the Constitution and the Policy Book. Our normal tasks of preparing and presenting your representations to the

proper authorities can also be effected more expeditiously if they are presented to us in the correct constitutional manner. Needless correspondence can be avoided and I do enjoin all Divisional Councils to give first priority to matters requiring a vote of Federal Council. These votes are too often unnecessarily delayed resulting in further delays before an official decision is made by the authorities concerned.

Every member should know of the correct channels through which he can express his opinions and present problems. This channel is through his Divisional Council via his Federal Councillor to Federal Executive where a Federal Council vote is called for or alternatively, presented to the authorities depending on the circumstances. In this way, a member may have the whole weight of Institute opinion behind him rather than the individual unconstitutional direct approach, which is regarded officially as a "voice crying in the wilderness." Do please adopt the correct channel as a member, when your Executive can pursue your proposal to a successful conclusion with all the vigour and force at its disposal.

Without encroaching too far into your retiring President's territory in relating to matters of the last year, it is indeed gratifying to see the Short Wave Listeners' Section of the W.I.A. growing so quickly. It is from the ranks of these young men that so many of us graduated to our present status, and I would like to see them encouraged and helped as much as

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# A Discussion of Receiver Performance

## Some Fine Points and Unsolved Problems of Receiver Design

BY E. W. PAPPENFUS, W0SYF

SINCE good communication super-heterodyne receivers have been available for about 20 years, it is surprising that there is anything left to discuss about this line of equipment. However, the large number of letters that are written to the manufacturers questioning receiver performance points to the need for a discussion of the action of a receiver under certain conditions. These include weak-signal reception as well as performance in the presence of a very good signal. Many Amateurs feel that there is no need to miss a QSO because a signal is weak. They feel that if a signal can't be read, it is strictly the fault of the set design. At the same time, it is hard for many radio operators to understand why a receiver cross-modulates and blocks when the kilowatt station next door comes on the air. As you may guess, this is a discussion of the reasons why a receiver is not all the Amateur expects and perhaps also a defence of receiver design.

The subjects to be discussed include receiver sensitivity, signal-to-noise ratio, noise figure, cross-modulation and blocking. It is self-evident that a receiver for Amateur use, and particularly for DX, must have a great deal of inherent amplification. The ability of a receiver to make a lot of sound in the loudspeaker with a very weak signal is called "sensitivity". High sensitivity in a receiver is a necessary, but not sufficient, definition of weak-signal receiver performance. "Signal-to-noise ratio" is also very important.

It is not quite as apparent that a good communications receiver must be free from overloading or cross-modulation when strong signals are present. These undesirable effects are generally overlooked in the general confusion and congestion of the present-day Amateur bands. It must be admitted that the modulation splatter blamed on the local Amateur at the other end of the band is sometimes generated in the receiver. It is unfortunate that a receiver designed for very good weak-signal performance should have difficulty with extremely strong signals. This, however, is the case, and it is an area in which an engineering compromise must be reached. Like most compromises, it is open to argument, and there is no completely clinching evidence to prove that the receiver design was right. The compromise involves r.f. stage gain, a.v.c. characteristics, r.f. selectivity, type of r.f. tubes, type of mixer tube, and mixer noise. With all of these balancing factors it may be seen that it is not an easy decision for the set designer.

The signal-selectivity chart for a 75A-3, shown in Fig. 1, will help to explain some of the items discussed previously. In developing this chart, a signal generator was set for a conven-

● Here is an article on receivers that anyone with the slightest interest in "why" should not pass up. It won't tell you how to build anything, unless you read carefully between the lines, but it will certainly help you to understand some effects that may have been a mystery up to now.

ient level at the antenna and then moved back, stage by stage, toward the diode detector. The signal generator output was adjusted to hold constant diode-load voltage at each point in the circuit and, of course, the frequency was changed appropriately at the i.f. amplifier. The signal generator was then returned to the antenna terminals and increased to simulate a stronger signal. Again the signal generator was moved toward the second detector holding diode-load voltage constant. Moving the signal generator along, stage by stage, is equivalent to a voltage measurement at that point. A family of curves was generated, as shown, that gives a complete picture of receiver performance with various r.f. input levels. A change in gain is represented by a change in slope of the curve. Note the constant gain of antenna link to first r.f. grid, and the reduction in gain due to a.v.c. in the first r.f. stage and the i.f. amplifiers. It is clear how the gain of the five controlled stages changes to hold the diode-load voltage almost constant.

### A.V.C.

The basic function of automatic volume control in a receiver is to keep the diode-load voltage constant and thus

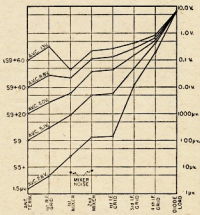


Fig. 1—A signal-level chart of the 75A-3 receiver, showing the signal levels that exist through the receiver for various input signals and bias voltages.

hold constant audio output for changing signal levels. This is apparent from Fig. 1, because the diode-load voltage does not rise appreciably above 8 volts as the signal level is changed from 1.5 to 100,000 microvolts. This constancy of receiver output voltage does not tell the whole story, however. It is important to "delay" the application of a.v.c. voltage until a suitable signal-to-noise ratio is reached. This allows the receiver output to increase in a linear manner with input signal level so that receiver noise is rapidly overcome. In the 75A-3 the a.v.c. does not become effective until the input signal is about 1.5 microvolts. In addition, some sets delay the application of a.v.c. voltage to the r.f. stage until even higher signal levels are reached. This also contributes to a linear improvement in signal-to-noise ratio as the input signal is increased above the a.v.c. threshold. As an example of delayed a.v.c. action, if a 2-microvolt signal gives a 10-db. signal-to-noise ratio, then a 20-db. increase to 20 microvolts will give a 30-db. signal-to-noise ratio. A 10-db. signal-to-noise ratio provides a good readable signal, but a signal with less noise is more enjoyable and less tiring to the operator.

By dividing the a.v.c. voltage applied to the r.f. stage in the 75A-3, suitable action is obtained without separately delaying the r.f. stage a.v.c. voltage. Since a sharp cut-off tube is used in the 75A-3 r.f. stage, there is a secondary reason to limit a.v.c. voltage to this tube. A 6BA6 is a better tube for a.v.c. action, but unfortunately it is a very noisy tube compared with the 6CB6 that is used.

Manual gain in the 75A-3 operates on the a.v.c. line, just as the automatic volume control does. This means that the gain distribution is proper for any reasonable setting of the manual gain control. It is possible to degrade the signal-to-noise ratio with manual gain control if too much gain-adjusting action is applied to the r.f. stage, so that mixer noise is proportionally larger. Noise tests on a receiver should be made at various signal levels to insure that manual gain control is applied to the proper stages.

### WEAK SIGNALS

It is possible to put a large amount of over-all amplification in a receiver because the amplification at a given frequency can be held to a manageable level through the use of the super-heterodyne principle in single or multi-conversion (75A) schemes. The gain from antenna to loudspeaker in a typical communications receiver may be as great as 10 million, but all this gain does not permit the Amateur to copy a weak DX station unless the noise contributed by the antenna coupling circuit, the first r.f. tube shot noise, mixer noise, etc., is held to a low value. That



is the reason receiver performance is specified by **signal-plus-noise-to-noise ratio**.

A signal generator modulated 30 per cent. at 400 c.p.s. (to simulate a speech signal) is fed into the receiver antenna terminal. The proper resistor is placed in series to match the receiver input impedance. The signal generator output is increased until there is a 10-db. increase in the reading of an output meter connected to the receiver audio over the level present when the modulation is switched off. This means that the signal (modulated portion) plus noise is 10 db. stronger than the noise level is acceptable for voice communications, hence the justification for this value. A good c.w. operator can copy signals with a lower signal-to-noise ratio, but the lower the signal-to-noise ratio, the more expert the operator must be.

It is dangerous to generalise, but it is possibly safe to say that any Amateur receiver with a 10 db. signal-to-noise ratio at from 1 to 3 uv. is in the high quality class. Noise-figure test of receiver performance make use of a noise diode and are the only real means of comparison between receivers of different bandwidth, because receiver noise voltage varies proportionally to the square root of the bandwidth. A narrow-band receiver should not be compared directly with a wide-band set. Noise figure expresses the ratio in db. between the noise level of the receiver under test to a so-called perfect receiver in which all noise is assumed to be generated in the dummy antenna due to its thermal noise.

It can be shown that a perfect receiver with 6 Kc. bandwidth and 100 ohm input would require 1.4 uv. to have a 10 db. signal-plus-noise-to-noise ratio. This receiver when operated with a dummy antenna matching the receiver input impedance has a 3 db. noise figure. It is theoretically possible to improve the noise figure by mismatching the antenna, but this is not important from a practical standpoint in the Amateur bands from 10 to 160 metres, because the antenna impedance cannot be predicted accurately. Again a compromise in design results, and a 100 ohm input impedance was selected for the 75A-3. Since signal generators are generally available and noise diodes are not, it is customary to use the signal generator method with 10-db. signal-plus-noise-to-noise as the standard of comparison between receivers. Incidental frequency modulation in the signal generator can cause errors, particularly at high frequencies, and should be guarded against.

Noise in a receiver results from so-called thermal-agitation noise in the input circuit, shot noise, mixer noise and amplifier noise. Pentagrid mixers are particularly noisy tubes, but they are advantageous because of the ease with which the oscillator can be fed into the mixer and the freedom from coupling of oscillator voltage to the signal grid.

If enough gain-producing elements precede the mixers, then the mixer noise can be neglected. Since the greatest gain exists from the grid circuit of

the first r.f. amplifier to the receiver output, it is logical to expect this noise to be louder than any other receiver noise. This is not always true, but in a properly designed receiver the input noise makes the greatest contribution to over-all receiver noise. This can be demonstrated by peaking the grid circuit, with a resistor of proper value cut, with antenna terminals. A rise in receiver noise output when the first r.f. tank circuit is tuned compared with the completely detuned condition indicates the proper gain distribution. A drop in noise level as the first r.f. tube is removed also shows that the mixer noise is not an important factor in over-all receiver signal-to-noise ratio. Two r.f. stages are generally not required to approach the ideal weak-signal receiver performance, because a single stage using a high transconductance tube will amplify the signal sufficiently to override the mixer noise. The chart of Fig. 1 shows the equivalent noise present at the mixers. The gain here appears sufficient to override completely the mixer noise with 1.5 uv. input.

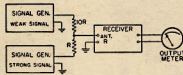


Fig. 2.—The cross-modulation effects in a receiver can be measured by using two signal generators connected as shown here.

If this peaking effect of noise with antenna terminals properly loaded with a resistor is not found, then the antenna coil gain, antenna circuit Q or r.f. amplifier gain should be adjusted until the receiver noise is dominated by the receiver input noise. Only then can the operator say that his receiver is able to hear the weakest stations. This actually is a rather theoretical consideration because of the large amount of static and interference prevalent, except perhaps on the 10 metre band. When the weakest reading on the S meter across the entire 20 metre phone band is S6 to S9, because of a solid array of strong signals, obviously receiver noise is not then the limiting factor. Receiver bandwidth is much more important. Atmospheric and man-made static on the antenna also limit the signals that can be copied. Only rarely can the full signal-to-noise capabilities of a receiver be used. This can be checked by tuning to an unused portion of the band (that's a joke, son) and then removing the antenna from the receiver and replacing it with the equivalent resistance. If the receiver noise output drops, then the antenna noise is the limiting factor and not the noise developed within the receiver.

## STRONG SIGNALS

For the reception of strong signals, an additional receiver requirement is added. Radio frequency voltages applied to any stage of the receiver must not exceed the bias for that stage with any signal ordinarily encountered. Fortunately, the receiver a.v.c. voltage increases the bias applied to each stage

and at the same time reduces the gains through the receiver when strong signals are tuned in.

Five controlled stages are used in the 75A-3 a.v.c. circuit. By removing one controlled stage or by reducing the proportion of a.v.c. voltage fed to a stage, it is possible to change the receiver gain distribution. The set designer has this "handle" by which he can set the gain curve to the desired shape. The curves of Fig. 1 show sufficient r.f. gain adjustment so that the mixers are protected from large signal voltages for any signal from the range of the S meter. Because mixers are somewhat critical in the application of bias, the first and second mixers are omitted from the controlled circuit and set at a suitable bias by voltage drop across a cathode resistor. The exact gain distribution within a receiver is not critical within the limitation that all stages must be held below the over-load region with the highest signal level ordinarily encountered.

Strong signals outside the passband can reduce the set gain if rectified grid current flows in any stage which can charge up the a.v.c. line. A decoupling resistor and a low-resistance a.v.c. line minimise this effect.

Representative voltages for 0.5 volt input are 1.5 volts on the r.f. grid and 1.1 volts on the second mixer grid. At these voltage levels the mixer draws grid current and its conversion gain is reduced. The overload point for a receiver is defined as that input level at which a 6 db. drop in audio output occurs compared with the maximum audio output as the input signal is increased. Overload point for the 75A-3 is at 1.4 volts. A small amount of grid current in the mixer is not serious, as indicated by the fact that the overload point is well above the input at which the peak r.f. grid voltage applied to the second mixer exceeds its bias.

All s.s.b. operators will cry out loudly at the above statement. It is possible to tolerate grid current in a receiver mixer because the performance standards are so much lower than in linear amplifiers. In a s.s.b. transmitter it is desirable to keep intermodulation products down 30 db. Harmonic distortion of the signal in a receiver can be tolerated if it is 10 to 20 db. below the signal level. This explains the ability of the receiver mixers to operate satisfactorily with small positive grid voltages.

For the reception of weak signals described earlier, it is desirable to have as much gain as possible ahead of the mixers. This would insure that the signal level would be strong enough to override completely the noise from the pentagrid mixers. However, from the standpoint of strong signals, it is desirable to have low amplification until the selectivity of the receiver is effective. This would insure that only signals in the i.f. passband would tend to overload the set and these could be more readily accommodated by the high a.v.c. bias and gain control that is effective in the i.f. amplifier. These requirements for no amplification ahead of selectivity for strong signal reception and high gain in the antenna circuit and r.f. stage for weak signal reception are in direct conflict. It is fortunately possible to make an engineering compromise that will

† Goodman, "How Sensitive Is Your Receiver?" "QST", Sept., 1947.

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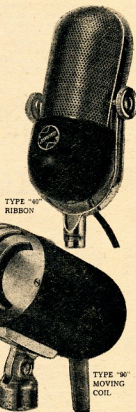
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accommodate the majority of operating situations which confront the Amateurs. Weak signals can be handled by using just enough r.f. stage gain to override the mixer noise by about 6 db. or slightly more.

### CROSS-MODULATION

When the receiver is tuned to a weak signal and a strong signal is present outside the i.f. passband, then a different condition prevails than in the strong signal case outlined above. There is very low a.v.c. bias generated to protect the grids of r.f. and i.f. amplifiers from grid current and only moderate gain reduction to prevent strong signals from stage to stage in the receiver.

The only gain-reducing elements present are a small amount of a.v.c. bias generated by the desired signal, and the selectivity of the r.f. and variable i.f. coils in double conversion receivers. The selectivity of these coils determines the r.f. voltage applied to mixers and i.f. amplifiers. With very large signals applied to any stage of the receiver, nonlinear operation causes modulation components of the strong signal to appear on the weak signal. This, in effect, means that strong phone signals outside the selectivity curve of the i.f. amplifier can still be heard. The term "cross-modulation" has been applied to this effect.

Cross-modulation in a receiver is measured by a laboratory set-up as shown in Fig. 2. Two signal generators are used to simulate the two signals. One signal generator feeds the receiver through a resistor equal to the input impedance while the other signal generator feeds through a resistor of ten times the input impedance. The resulting impedance is then very close to the matching value. The signal generator feeding through the large resistor is set for a value of r.f. that will produce an antenna terminal signal of, say, 10  $\mu$ v. (approximately 5  $\mu$ v) at receiver centre frequency. The audio output is measured and signal generator modulation is removed. The second signal generator is then turned on and adjusted for 30 per cent. modulation. At various frequencies near the receiver centre frequency the r.f. level from the second signal generator is increased until the desired audio output is 10 db. less than that measured with first signal generator.

A plot of these values for the 75A-3 operating at 4.0 Mc. is shown in Fig. 3. Adjacent signals at S9 plus 40 db. can interfere if they are closer than 15 to 20 Kc. from the desired signal. Approximately 50 Kc. separation is required for signals that are 60 db. above S9. The cross-modulation curve of Fig. 3 is an inverse composite of the receiver input selectivity. The lower part of the curve is determined by the selectivity of the receiver circuits to the second mixer grid and the upper part of the curve is shaped by the selectivity to the first mixer grid. The r.f. stage is never responsive for cross-modulation below 1 volt r.f. on the antenna for a 10  $\mu$ v. desired signal level. The portions of the curve at which the first and second mixer respectively contribute to the cross-modulation are indicated. A portion of the curve entitled "both" is a transitional area in which both mixers contribute to cross-modulation.

The application of a.v.c. voltage to the r.f. stage reduces its gain and helps protect the subsequent stages from excessive voltages. The matter of cross-modulation characteristics of an r.f. tube is extremely complicated, so just taking a given tube and applying a.v.c. bias is not the whole answer. There is no substitute for a large number of cross-modulation tests to determine proper r.f. stage conditions. There does not seem to be a receiving tube available that possesses the extremely large signal-handling capabilities required. Several tubes recently announced show some promise, but until they are proven, the receiver designers laughingly suggest a 4-25A or similar for the receiver r.f. stage.

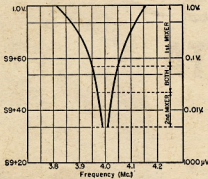


Fig. 3.—The cross-modulation characteristic of the 75A-3 receiver, with the receiver tuned to 4.0 Mc.

To prove cross-modulation when operating "on the air," the received signal can be reduced with a 20 db. resistive attenuator. This will reduce an S9 signal to about S6, which is still readable, but at the same time drop a 1-volt signal, due to that kilowatt next door, to 0.1 volt. If the splatter disappears when the attenuator is placed in the antenna lead, then the difficulty is in the receiver. Remember not all modulation splatter is in the receiver. A few inconsiderate Amateurs are guilty of severe overmodulation.

A more simple test is to remove the normal antenna and connect any short piece of wire that will reduce the desired signal to a just readable level, and then note the presence or absence of splatter. Either test is acceptable for tracing the source of this type of interference.

If you are not looking for weak signals, either of the above methods for reducing input signal level can help receiver cross-modulation. A separate r.f. gain control (variable cathode resistor) is also sometimes helpful in reducing the cross-modulation that occurs in the mixers.

This receiver discussion has been handled in general terms. A later article will give some hints as to how the 75A-3 can be adapted best to serve the Amateur with special interests like DX work on one hand or just local rag-chewing on the other.

I would like to express my appreciation to the many Collins engineers who assisted in this discussion of receiver performance.

## AMATEUR CALL SIGNS

FOR MONTH OF JANUARY, 1955

### NEW STATIONS

- VK— New South Wales**  
 2ABF—C. E. J. Sims, 2 Verlie St., Merrylands.  
 2ASX—C. H. A. Armstrong, The Caravan Park, Wagga Wagga.  
 2ATN—F. G. Barron, Flat 2, "Exeter Manor," 78 Macquarie St., Parramatta.  
 2AWC—W. W. Cohen, 27 Hinkler Cres., Lane Cove.  
 2AXT—A. R. J. Topp, 33 Western Rd., Parramatta.  
 2ZAF—J. F. Folkard, 10 Clovelly St., Watsons Bay.  
 2ZAA—L. W. Cook, 159 Bronte Rd., Waverley.  
 2ZAV—W. J. Lark, 34 Church Ave., Westmead.

### Victoria

- 31B—A. C. Hawker, 75 Lloyd St., Dimboola.  
 3RG—J. H. Jones, 36 Hamel St., Box Hill.  
 3SB—A. L. Brehaut, 20 Clyde St., Oakleigh.  
 3XT—G. F. Millard, 18 Ward St., South Melbourne.  
 3ADL—C. Luckman, 2 Milton St., Canterbury.  
 3AML—R. E. A. Grigson, 14 Grace St., Malvern, S.E.A.  
 3AQF—J. R. Fryer, 424 Plenty Rd., Preston, N.I.S.  
 3AVS—M. Strohfeldt, 13 Lindsay Ave., Murrumbidgee.  
 3AXG—J. M. Gibson, 31 Dawn St., Highbett.

### Queensland

- 4ZAA—M. F. McManus, 72 Sylvester St., Windsor.

### South Australia

- 5AE—F. A. Eastick, Station: Administration Hotel, Cr. Todd St. and Stott Tre., Alice Springs, N.T.; Postal: C/o. P.O., Alice Springs, N.T.  
 5KS—R. A. Sedunary, 51 Gertrude St., Glendore.  
 5ST—B. T. Southwood, C/o. Dept. of Civil Aviation, Box 35, Tennant Creek, N.T.  
 5WB—W. S. Beane, 83 Glenlyne Tce., Plympton.  
 5ZAG—L. M. McGrath, 14 Tallara Ave., Mount Gambier.  
 5ZAX—R. W. G. Wehr, 20 Kintore Ave., Prospect.

### Western Australia

- 6HM—C. W. B. Holman, C/o. Radio Station 6NA, Narrogin.  
 6ZAV—D. F. M. Brown, "Valona," Coode St., Bayswater, Perth.

### Tasmania

- 7VS—I. L. Griffin, Alexander St., Cornwall.

### Territories

- 1EM—E. L. Macklin, Mawson, Antarctica.  
 1RA—R. W. Allison (Dr.), Mawson, Antarctica.  
 9RC—R. M. Ellison, S.D.A. Mission, P.O. Box 21, Wau, N.G.

### CHANGES OF ADDRESS

- VK— New South Wales**  
 2QL—F. T. Hine, 39 Abbotsford Rd., Homebush.  
 2QP—L. W. Hughes, 64 Lowry St., East Bankstown.  
 2ACV—A. G. Mulcahy, Station: S.S. "Koora-watha," Postal: Mt. Warrilla, McRae, Box 255C, Melbourne.  
 2ADH—F. C. Deaman, Flat 52A, Housing Commission, Sydney.  
 2AJQ—J. C. Turner, 284 Keppel St., Bathurst.  
 2AKU—J. Georgeson, 7 Rothwell Cres., Lane Cove.  
 2AQN—J. F. Cox, 8 New England Drive, Kingsgrove.  
 2AVO—J. T. Crichton, Rous Rd., Goonellabah.

### Victoria

- 31F—M. K. Bunn, 118 Kew Rd., Kew.  
 31G—J. A. Williams, 110 Johnston St., Newport.  
 3MX—P. J. Seibre, 4 Howell St., Moorabbin.  
 3UJ—A. Roudie, Crofton Way, Crofton.  
 3ZU—F. A. O'Donnell, Lynch St., Yarravong.  
 3ABM—J. B. Watson, Station: S.S. "Eastern," Postal: C/o. Messrs. MacDonald Hamilton & Co., Box 326D, Melbourne.  
 3AJO—J. R. O'Halloran, Church St., Lakes Entrance.  
 3ALA—E. A. Clark, Laura St., Maffra.  
 3AOB—E. O'Brien, 33 Hare St., Shepparton.  
 3AGR—M. W. Ray, 9 Hedderwick St., North Balwyn.  
 3ARF—R. C. Shortell, "Redwood," Bayswater Rd., Crofton.  
 3ASC—S. T. Clark, Station: 104 St. Heller St., Heidelberg, Postal: Flat 20, 100 Drummond St., Carlton.

(Continued on Page 12)



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# SEVENTH ANNUAL URUNGA CONVENTION

The North Coast and Tablelands Zone Convention was again held at Urunga commencing 8th April and running until 11th April, and it again proved to be one of the most popular Conventions. The weather was not so kind as in previous years, but as the time passed, it appeared that the organising committee also had some say in the activities of Jupiter Pluvius.

Many of those attending had arrived by Friday and duly settled in to the hotel, guest houses and the camping reserve, and all attended a meeting held at the Ocean View Hotel on Good Friday night. The meeting was presided over by the Convention President, Alan Williams, 2FH, who welcomed firstly the President of the N.S.W. Division, Jim Corbin, 2YC, and the Federal Secretary, Doug Bowie, 3DU, to Urunga. Alan outlined the agenda of the meeting and the President gave his introductory speech on Institute matters. The site of the 8th Convention of this zone was discussed and it was decided that the Convention be held at Easter weekend, 1956, and should be held again at Urunga. Its ideal geographical location, its facilities both for accommodation and for the organising of competitions, and the great support given to the committee by the local organisations, making it the ideal place for such a function.

Officers were duly elected for the coming year, the election resulting as follows: Patron, Criei Retallick; Convention President, Noel Hanson, 2AHH; Vice-President, Jack Gerard, 2ADN; Secretary, Alan Williams, 2FH; Treasurer, Ted Gabriel, 2AVG; Organiser, Peter Alexander, 2PA; Sydney Liaison Officer, Ted Whiting, 2ACD.

Discussion then took place on a number of matters affecting the Zone Disposal, the N.S.W. Co-Operative Ltd., etc. Answers to many questions were given by the President and both he and the members of the N.S.W. Council present, Barry 2AAB and Don 2ASW, came away from the meeting with many ideas and the opinions of the members of the North Coast Zone members.

Many informal discussions were held with Doug Bowie, Federal Secretary, and many points of interest were cleared up, Doug being particularly pleased that he was able to make so many personal contacts and discuss so many and diverse subjects.

The next day, Saturday, the morning was given over to the registration of those attending and of course the usual ragchew. On such occasions many old friendships are realised and many new ones made in an atmosphere of conviviality. Those registered: 2AHA, 2XT, 2ACU, 2YC, 2AAB, 3DU, 2ARY, 4PR, 2EA, 3Q, 2FA, 3AID, 2SR, 2OE, 3ALF, 2AVG, 2AVS, 2AUL, 2FH, 4TH, 4E, 2AXZ, 2AHH, 2ACD, 2ASW, 2WJ, 2AWG, 2APB, 2JK, 2ABT, 2ABP, 2AQC, 2AMV, 2JC, 2APS, 2ADN, 2ASA, Associates Norm Dash, Bob Bailey, Les Gilbertson, Harry Miller, Roy Woods, Norm Moody, Snow McCauley; Ladies: Mesdames Bowie, Rafter, Bowler, Alexander, Ash, Dunford, Meagher, Smith, Miss M. Hunt.

The "Gerry Challenger Remembrance Contest" for 7 Mc. Portable and Mobile stations was held in the afternoon. All contestants starting from the green and proceeding to their locations within a 3-8 mile radius of the town to commence operation 30 minutes later. Concurrently with this event, the ladies were conducted on a launch trip up the beautiful Bellinger River by "Admiral" Moody.

Following dinner, a social gathering was held at the camping reserve at which some excellent films were shown by Ted Hamney from Coffs Harbour, slides by John Meagher followed showing the results of the recent disastrous floods at Gilgandra and Forbes. The popular item on the evening programme was, of course, the de-modulating of the 807. Music was supplied by Rod Woods on the accordion and most attending reached their accommodation at a very early hour.

The 144 Mc. Tx Hunt was held in doubtful weather, but despite the conditions several contestants found the tx manned by 2FH and Norm Dash some miles out of town. 2AAR and others experienced difficulty with a road but all ended well.

The W.I.A. Broadcast was made from the mobile station of 2ASA and was conducted by Jim Corbin and Doug Bowie.

Possibly the most humorous event held at Urunga was the Blindfold 144 Mc. tx hunt held on the green in the front of the hotel. The control station was moved for each heat and all agreed that it is a most amusing event. Meanwhile, "General" Moody conducted the ladies on a scenic car trip up the Bellinger Valley to Bellinger and return, the scenic beauty of the district impressing the visitors.

Next event was the Urunga Scramble for a trophy donated by United Radio Distributors. The object of this contest is to work the most stations on any power from any source, no holds barred. A special prize in this event is given for the best contact on a miles per watt basis.

Sunday night-brings an annual event, the Concert held in the School of Arts, Urunga. At this concert all the local people are invited by the zone members,

the hall was full and a fine programme was arranged by Jack 2ADN. Artists taking part were: Vic Hardacre, Lindsay, Ina Alexander, Melody Coles, Roy Woods, Noel Hanson. Apologies for non-attendance were received from Criei 2XO who, with Mrs. Retallick, is marooned temporarily in VK7 and many other chaps who found that they could not attend. The compere for the evening, Ted 2AVG, introduced Jim Corbin, Doug Bowie, Mr. Cooper (President of Progress Association) and Mr. A'Hearne (Secretary Progress Association). In his address of welcome to the visitors to the town, Mr. Cooper stated how pleased his Association was to see so many visitors to this popular resort and referred to the part Amateur Radio played in the recent emergencies. Jim Corbin replied in his customary manner, but on this occasion did not eclipse his endurance feat of the previous night when he spoke for some long period of 75 minutes (2ADT and 4AB please note!).

Following an excellent concert, the prizes won in the events of the Convention were presented by Doug Bowie, Federal Secretary (3DU). These were distributed as follows:

Gerry Challenger Trophy and Replica: Don 2ASW, 72 points, 1st; Noel, 2AHH, 65.7 pts., 2nd; Peter 2PA, 61 pts., 3rd. Urunga Scramble: Barry 2AAB, 45 contacts, 1st; Noel 2AHH, 43 contacts, 2nd; Alan Williams, 36 contacts, 3rd. Hidden Tx Hunt, 144 Mc.: John 2AMV, 1st; Norm Moody, 2nd; Harold Whyte, 3rd. Blindfold 144 Mc. Tx Hunt: John 4FP, 1st; Leith 2EA, 2nd; Harry Miller, 3rd. Lucky Number: Jack 2AJF won a toaster donated by A.G.E. Co. Ltd. Most miles per watt in the Urunga Scramble: Bill 2XT with a contact with ZLIADV.

Finally supper was served by the ladies of the local Progress Association and a further 807 was suitably dealt with, with the musical encouragement of Roy Woods. An excellent evening was had by all.

Ragchews and farewells are the order of the day on Monday, Doug and his wife to Sydney en route to VK3, full of thoughts and ideas for the future; the Hunter River gang back to their homes around Newcastle, and many journeying by road and rail to various parts of the State, all ready we feel sure to return to Urunga next Easter to enjoy more of the hospitality of the North Coast gang.

Noel Hanson wishes to record his personal thanks and the thanks of the committee for the support you gave them. More Amateurs visited this Convention than any previous one, and hopes that you will all return next Easter when it is hoped to arrange a bigger and better programme. Thanks go out also to the management of the Ocean View Hotel, Urunga; Pilot Guest House and Berry's Guest House, Urunga Progress Association, R.S.L. Urunga Branch, and to all those who contributed to making our stay in Urunga so enjoyable.—2ACD.

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# DX ACTIVITY BY VK3AHH†

## PROPAGATION REPORT

3.5 Mc.: This band continues to offer relatively good conditions for overseas communication. Times for North America, the Pacific Islands, and the Far East were between 0730z and 1300z. Openings to Europe existed around 2000-2115z.

7 Mc.: Here conditions followed the general pattern with Europe and North Africa over short and long path (1900-2200z and 0700-0900z) and North America around 0600-1400z. Some long path contacts with the East Coast of North America were possible around 2100-2300z. South American break-throughs were noticed around 0700-0900z.

14 Mc.: Some deterioration of conditions on this band has been reported. The band opened to Europe via the short path around 1300z and sporadically over the long path to G-land (0700-1000z). African openings occurred around 1700-2000z. Conditions to the American Continents between (2000 and 0600z, and around 1200z).

21 Mc.: This band showed some good break-throughs to North and South America and Africa (2300-0400z, 0500-0900z).

31 Mc.: The only report referring to this band does not mention any contacts.

## NEWS AND NOTES

Wherever DXers meet, on crowded Amateur bands or even personally, there is one topic which is certain to be dealt with, unfortunately more by words than deeds: Common are our complaints and united we stand against "Common-claims." The following list of frequencies within the 7.0 to 7.1 Mc. "exclusive" (!?!?!?) Amateur band, which are useless in Europe, has been received from a well known DXer, Ake, SM5AQQV: 7000, 7005, 7008, 7010, 7018, 7022, 7025, 7030, 7049, 7050, 7062, 7065, 7070, 7075, 7079, 7085, 7088, 7092, 7096, and 7100 Kc. On these frequencies B/C stations have actually been received and identified in Europe. We shall never be scared off the band by them, but shall insist on our rights—proven and true in 1921 as well as 1955!

Consequently, let us get into action! Let us boost 7 Mc. activity by every possible means: Contests, Scrambles, Certificates, etc. etc.!

The 23rd March, 1955, found Bill VKIEG, George VKIDY, and John VKIPG, of the Australian 1954 Antarctic Expedition being welcomed by VKs 31B (ex-LAC Macquarie Island), 3BG, 3YS, and 3AHH.

During the month, a well known W DXer, Bill Baird, W2CFN, gave the Melbourne gang an excellent chance for an interchange of thoughts and ideas on Amateur problems everywhere. It was a pleasure to have you here, Bill! We appreciated your interest in our W.I.A. activities!

Corn Island will be represented for three or four days beginning 23rd April, 1955. The station will operate on all bands under the call sign YNOYN. Information was received by 3WB from ZL2ASQ. (Thanks 3WB.)

HC8GT is active on 14160 Kc. (from 3KR, 3TE, W8CZD).

The boys at Mawson, Antarctica (VKs 1EM, KA, and WY) have commenced operation (from 3XB).

Activity by FY7YE and ZD8AA has been reported (from 3TE, W8CZD).

The only legal stations in Ethiopia are ET3R and ET3Q (from SM5AQQV).

A new station on the New Hebrides is YJ1DL (from ZL1ADIU).

† Hans J. Albrecht, 10 Belgravia Ave., Box Hill North, E.A. Vic. W.V. Jim Hunt, 2000-2200z and 0700-0900z) and North America around 0600-1400z. Some long path contacts with the East Coast of North America were possible around 2100-2300z. South American break-throughs were noticed around 0700-0900z.

ZC3AC can be expected to be on again next month. Frequency: 14163 Kc. He can copy c.w. (from 6MK).

By courtesy of the Northern California DX Club and their DXer: Activity list of VP8 and LU-2 stations: South Shetlands—CP8AK, AW, AX, LU3 3ZS, 4Z1, 1ZT, ZTO, 8ZS; South Georgia—VP8AT, AU, 8ZS; South Orkneys—VP8AQ, AE, and LU7ZM; Falklands—VP8AP, AN; Antarctica—LU1ZK, 2ZC, 9ZM, 1ZS, Grahamland—VP8AJ, AA, AO, BB, BE.

And from the Southern California DX Club and their Bulletin: MPQJAJ, FDSAA, and FL5AI are active on 14 Mc.

At time of writing there is no active VK1 on Cocos Island, but rumours are that the meteorological officer, who is qualified to get a license, will soon do so and represent the islands again (from 6MK).

Signing and posting, production, preparation, drafting and arrangement of our official W.I.A. propaganda for the Olympic Games were done by VKs 3TE, 3RN, 3ZS, 3AHH. Useful assistance was provided by VKs 3DU and 3NY. Other W.I.A. Divisions and the 76 Overseas Amateur Radio Associations should have received the information by now.

## ACTIVITIES

3.5 Mc.: Frank ZQL worked W\* and VET4HS, and heard KM6AX, KH6, JA5. Neville WPL reports W3 and JA1CJ. Neil 3BG worked W\* and Kel JA1CJ reports W\* and VE. Norm 3AXX heard a series of Ws, and Austin SWO also worked W\*, W\*, W\*. The next Eric who hears is 3AHH.

7 Mc.: SGL reports FASR3, FASD4, CTIDJ, G\*, PA\*, LU4\* and KA, IIRNU/Trieste, GC3KAV, OH, DL, MP4BLL, Laurie 2AMB added UH5, LU2EX, HIB9NR, DL1FP, DL1AA, GSCR\*, GSCD\*, VPEK1, FASD4, CTIDJ\*, and FASR9, YUZEL, KR6AZ, LU8BHG, YV1AD, OZ7BM, ZB1EQ, ZAP1 worked KH6\* on phone. Joe 3JA contacted W3\* over the long path. Ivor 3XB contributes PJ2AN, VP8BO\*. SWO worked with JA4B8\* and KM6AX\*. BERS19S: CE4AD, CN8MI, CN8IN, EA6T, FASD4, FASR9, FASR9, HB1EU, HB1SS, HB4FF, HB9QF/M, ITTAL, IIRNU/Trieste, JA7BE, KPA4AQ, KP4CC, KR6PT, KZ3FA, KZ3BE, MP4BLL, ODLCL, OQSRU, ZJZDN, TAJUS, VS1BJ, VO2AE, VQ4DW, YIZAM, ZESJO, 4X4FW, YUM4AX, YUDCI, MM, Jim Hunt added LP3FL, HB4WV, YN4OB, CT1SD, YUDCI, CEST, KIB—on phone. Dave Jenkins reports JA1AF, DL4YN, YU4AJ, YU4DOF, SMC8WC, FK8AL.

14 Mc. C.w. SGL: PJ2AX, KQ8\*, KJ8\*, and MPQJAJ, MPQJAJ, 2AMB, ZC3AC, ZC3AC, ZAP1, GC3KAV, Alan 3CX, ZM\*, DL\*, KA\*, VRI3A, MPQJAK, TIBEX\*, KH6\*, P, VK1HH\*, ZB1AY\*, ZB1AY\*, JA\*, JA\*, JA\*, JA\*, V\*, and 4W1AB. Ken K8R: I\*, 457W\*, OH\*, VK1ZM, DL\*, YU\*, 3XB: VK1EM\* (Mawson), VSAE\*, Lee 3XO: KA\*, KR5\*, OH\*, ON\*, Y\*, SM\*, DJ, KR6G, KIB\*, DL\*, 8BB\*, KX6\*, Bob 4RW: ZDBPC\*, YV5B\*, Jay 8KR: KA/JA, 3XO: KCEAJ\*, DL\*, W\* (long path), BERS19S: CN6GW, KIB\*, ICV, FADPAD (?), KJ6, KR6, LU5E, PY2CK, JZ6AQ, VK1RH, VS1BJ, VS6CG, VS6CW, VS6DB, YU2ET, Dave Jenkins: YV5DE (1192z), FNTWD (1130z), KV4BK, VJ1BJ, DL, KQ6, G, ON4, FANZJ, JA, VS8CT.

14 Mc. Phone: 3KR: KR5OK\*, HC1ER\*, HC8GT\*, Stan 3TE: CT1PK, DL\*, EA\*, FARWID, G\*, GWXN\*, I, KQ6, KIB\*, OH\*, PA\*, XE1TR, 3VB8P\*, Harold 3AHC: BV1US (Formosa, 14165 Kc.), Europeans: 4RW: ZDBPC\*, OASN, HK3AZ, LU5AA\*, P, KIB\*, KSA1W, ZB1AJ\*, HC1ER\*, VR3C\*, EA8AZ, CT1PK\*, HC1FG\*, HBIMX\*, John 5H: KJ8\*, VR3C\*, KX6\*, KH6\*, XRE\*, P, KR6\*, ZSSAW\*, US2Z, 3VB8S\*, H8CZ\*, I, TG8OM\*, HC8GT\*, ON\*, HC1ER\*, ZS1SW, YV5AO\*, SWO, G\*, P11\*, P, OD5IBQ\*, PQW6EQ\*, FADMDMG, RA\*, KA\*, VS8CT, Tom 6MK: ZDBPC\*, EL2X\*, ZD2HRW\*, ZSSP\*, ZD2RD\*, VO5EK\*, VO5CB\*, BERS19S: KAJL, KR6, KX6, KIB, Jim Hunt: 3JRA5, KTIWJ, EA8AS, HC1ER, YN1LI, XE1TR, 3VB8P\*, VU1RG, VU2ES, VU2SS, KP6AK, DUTSV,

F18BB, ZM6AR, VS6BE, VS2EM, F/8BF, F18AO, VS2DQ, DU1JE, DUTCE, Dave Jenkins: OAZA, ZS1SW, TIR2MK (0784z), G, I, CN8MS, VR2BZ, F18IE.

21 Mc.: Percy 3PA reports W\*, HC1FS\*, O4AC\*, DUTSV\*, KA2KS\*, JA\*, KZ5MB\*, KZ5YJ, KH6UC\*, KA2K\*, KQ6Z\*, HC1ER\*, HC1PL\*, KR6AB\*, ASTYL\*, JA\*, YN1AA\*, and KZ5CP. SWO: Ws, KH6AV\*, VQ2DT\*, KA2KS\*, W8AXI/MM\*, HC1FS\*, HC1FT\*, HC1ES\*, 6MK: VQ2DT\*, ZS\*, VQ4\*, Jim Hunt, heard HC1FS, HC1PL, HC1ES, KZ5AS, KZ5BR, HK5ER, YN1AA\*, T3LA, VQ2DT\*, VQ4AQ, ASTYL\*, VS6BZ, VS6CW, APL, VS1FC, MP4, KAC, 4X4AC, G3ABH, HZ1TA, KQ6ZB, KQ6, KASRK, KA2KS, KA2KC, KA2MH, H8ARN, KIB, KIBH, KIBHAR, WIDF/MM, W2UL0, MM, KQ6Z/MM, W2ZXX/MM, W3UJY/MM, W3HXE/MM, W3OZA/MM, W4UGZ/MM, W5AXI/MM, W6WU/MM, WU1LH/MM, Ws.

27/8 Mc.: 3PA reports that KA2KS heard VK signals during the W/V2 Contest.

Rare QSLs were received by 2AMB: CP3CA, SWO: CRTA, APQ, EASAR, OAZA, MPMBBE, YV3CE, OZ1HW, ET1B, 6MK: VS5KU, BERS19S: TAZEPFA, MD2KP, VK1RI, ZC4IP, VS5KU.

Thanks to the Northern California and Southern California DX Clubs, SM5AQQV, WCZDZ, ZL1AAI, and VKs 2QL, 2AMB, ZAPL, 3CX, 3HG, JA, 3KR, 3FA, 3TE, 3XB, 3XJ, 3YS, 3ARP, 3AHC, 3AXX, 4RW, 5H, 5RK, SWO (you should also have been mentioned here in the last issue—sorry, Austin, my mistake), 6MK, and s.w.l.s. BERS19S, Jim Hunt, and Dave Jenkins.

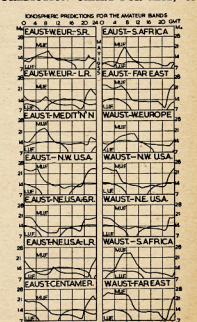
## VALE KEITH RUDKIN, VK2DG

Radio Amateurs throughout VK and ZL felt deep sorrow at the untimely death of Keith Rudkin, VK2DG, at the age of 41 years. Keith was always a c.w. man, and during his years of operating on DX bands he made thousands of friends and gained himself a full score of certificates. On numerous occasions Keith won the c.w. section of the VK-ZL Contests and he also won the c.w. section of the Jubilee Contest. He was formerly was Radio Engineer at 3MR and latterly at 2NX where he performed sterling service during the recent flood emergency.

His quiet unassuming manner endeared him to all who met him and he will be sadly missed from the ranks of the Hunter Branch.

We extend our deepest sympathy to his wife and sons in their time of sorrow and we know that Amateur Radio will be the poorer for his passing.

## PREDICTION CHART FOR MAY, '55





# SHORT WAVE LISTENERS' SECTION\*

## S.W.L. GROUP REACHES TO SWEDEN

From Sweden we received mail from two new members, Len Thornhill, Bjornhagen, Karlensjö, Sweden, and his companion, Bo Ericsson, of Box 465, Valasen, Sweden. To you Len and Bo we welcome you and wish you pleasant future DX. Len states that their hobbies are DXing, stamps, and souvenirs and would like to hear from any interested Amateur. They heard of the S.W.L. from Australia so we must thank Graeme Hutchings, of "Radio Australia," for publicising our activities to the world.

## VICTORIAN GROUP

The last meeting of the VK3 S.W.L. Group met on 29th March at 191 Queen Street. Much discussion took place on the future activities of the club and keen interest has been aroused concerning the coming Hobbies Exhibition which is to be held during the month of August. Reports have been received to state that the W.I.A. have been allotted a stand and this year the s.w.l.'s will help fill the display.

Meetings are held on the last Tuesday of the month. At the May meeting, representatives of Eddystone, the makers of Eddystone Communication equipment, will give a lecture and demonstration of the famous Eddystone equipment. The June meeting will take the form of a constructional night. Bring along any gear and problems you have and we will endeavour to iron them out for you.

## SOUTH AUSTRALIAN GROUP

We were pleased to receive from Mac Hilliard a report of the March meeting of the VK3 Group. This Group was formed in February. The first meeting took the form of a general discussion. It was decided to elect officers at the March meeting, however only eight members turned up and it was decided to leave this until membership had increased. Jim Paris, who is the Associate member on the Council, was Chairman.

It is hoped to further the interest in general short wave listening by arranging a display at the Hobbies Exhibition, which is to be held in Adelaide during March.

The VK3 S.W.L. Group meet at the Central Methodist Mission in Franklin Street, Adelaide, at 8 p.m. on the second Monday in each month. To the VK3 Group we in VK3 wish you every success in the formation of your group and all the best DX. By the way, boys, how about arranging an Interstate s.w.l. contest? Write and let us know your reaction to the subject.

## HEARD ON THE BANDS

144 Mc: From Gerard Lane—32AA, 32AC, 32AB, 32CD, 32EL, 32CH, 32AF, 32ALW, 32YS, 32FS, 32AR, 32ALY. From 32AA we heard 3BH, 3RK, 3YS, 3ML, 3BQ, 3CP and 32AA.

11 Mc: Michael Ide heard VS2, KA2, CTI, 32AQ heard 487, VS2, 487, VK9, JA5, KR8, 4A2, K4H, 3L8, ZL1, ZL2. Cragen heard VK9, ZL1, JA4, KA2, KR8, KRT, Mac Hilliard heard ZSL, Z56, T12.

Broadcast Band DX: From Gerard Lane, the following DX tips are heard. 2YA Wellington, N.Z., 570 Kc. at 1900 hrs. 2ZB Wellington, N.Z., 980 Kc. at 1920 hrs. 2JP Japan, 690 Kc. 15 000 hrs. VUD India 110 Kc. at 1900 hrs. JOXK Japan, 920 Kc. at 0130 hrs. VOA Phil. Isl. 1140 Kc. at 0119 hrs.

Short Wave B.C. Bands DX: From Gerard Lane—On 15.24 Voice of Germany heard RS 8/9 at 2202 hrs. On 11.890 Mc. GWW in London at RS 8/9 at 2200 hrs. On 5.060 Mc. VY1 in Indonesia at RS 8/7 at 2200 hrs. On 6.185 Mc. KCBR, Dixon, California, U.S.A., RS 8/8 at 2100 hrs.

## RULES OF VICTORIAN S.W.L. GROUP

1. Membership is open to anyone interested in the non-transmitting side of radio, particularly for listeners, no matter what bands they listen on, i.e. short wave broadcast, broadcast band, or Amateur bands.

2. Membership shall be essentially same as Associate membership to W.I.A. except that those under 15 years no fee shall be charged for membership. All fees are as for Associate membership.

3. From the general members each year there shall be elected a President, Vice-President, Secretary, Magazine, Correspondent (and SWI Broadcast), and any committees that are deemed necessary (i.e. contest, etc.).

4. President shall be responsible for conducting all meeting, etc. and shall act as Chairman for same. Vice-President to act in his capacity when President is absent. Secretary to act as group correspondent, etc. Mag.

correspondent to prepare notes, etc., for "Amateur Radio" and for SWI Broadcast.

5. The Group's aim is to cater for all persons interested in radio. Provide a meeting place to discuss events, etc. Arrange demonstrations and exhibitions of equipment relating to their hobby. Organise contests for members' participation and competitions as it sees fit. To encourage its members into the field of Amateur Radio with its associated attractions.

## SEND THOSE ENTRIES IN!

The Contest closed on 31st March, 1955. Entries to be forwarded to John Wilson, 37 Raymond St., Alphington, Victoria, not later than 30th June, 1955.

Entries to contain the following—

(1) All cards to be sorted into section entered, i.e. 1, Amateur; 2, S/W Broadcast; 3, Broadcast band. Section 4 will be determined by judges, who will judge each section and then tally individual totals into an overall number.

(2) A list compiled by entrant of all cards sent (two copies), one will be returned upon

# Low Drift Crystals FOR AMATEUR BANDS

ACCURACY 0.02% OF  
STATED FREQUENCY

3.5 Mc. and 7 Mc.

Unmounted ..... £2 0 0

Mounted ..... £2 10 0

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Crystals, "Low Drift,"  
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INCLUDE SALES TAX.

**MAXWELL HOWDEN**  
15 CLAREMONT CRES.,  
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VICTORIA

-receipt of cards and will be official notification to entrant of receiving entry. It should also contain formal notice of entry into contest: e.g. I wish to enter the following verification into Contest, Section/s, etc.

All entries will be returned as soon as judges' decision is final.

Winners notified. Results in "Amateur Radio" for August and through VK3WJ on Sunday Broadcast on 31st July.

It is advised for safety sake to send your entries by registered post. All cards exercised while in judges' hands. All entries must be received at the above address no later than last mail 30th June.

## EDITORIAL

(Continued from Page 1)

possible, for they are the Amateurs of the future. I might also mention our new Limited Licensees who have now gained a place in our ranks. It should be your personal aim as a member to recruit as many of these and other Amateurs as members of the Institute. It is the policy of the Institute of encouraging membership, with the ideal of encompassing all licensed Amateurs within our ambit.

Another major task of the Executive is that of Emergency Networks. The disaster which so recently befell N.S.W. is still fresh in everyone's mind, and has once again demonstrated the worth of the Amateur to the community. Nothing but the highest praise can be extended to them for a job well done; and yet I am sure the N.S.W. Division themselves would be the first to admit that improvements could be made to the efficiency of their network. A National plan is imperative, into which Divisional nets can be integrated quickly in any emergency. Your Executive has already promulgated such a plan to the Divisions for approval. This plan should receive your earnest consideration and support, and it is our endeavour to bring this plan to fruition during the year.

It is most important for the Institute in particular and Amateur Radio in general, that we have direct representation at the next International Radio Convention, and if this is to be, a preliminary Region 3 Conference is needed. An opportune time for such an event would be during the Olympic Games in 1956, and although this will in itself require careful organisation and finance, we feel it is essential in order to coordinate the views of other Region 3 Societies, so that in the International event we can speak with one voice. This problem is already under consideration, and we hope to present Divisions with a workable scheme very soon.

A complete revision of the Policy Book is under way and should be with Divisions for confirmation within a month or so. All minutes and motions of past Federal Conventions will be carefully examined to see that no motions have been overlooked. Many other matters of equal import will be dealt with during the year, and finally I will reiterate my earlier statement that every effort and energy will be directed towards assisting the Institute as a whole to attain a status among authorities and public alike which an organisation such as ours so rightfully deserves. With your confidence, your energy and your zeal guiding us, such a goal becomes reality. "United we stand, divided we fall."

W. T. S. MITCHELL, Federal President.



# "ACOS" CRYSTAL MICROPHONES and MICROPHONE INSERTS

*A Complete Range For Every Purpose*

## DESK OR HAND MICROPHONE

### MIC 36



£6/18/6

Housed in attractive plastic case, this Microphone is ideal for home recording and public address, etc. Response unexcelled for its size and price. The performance is not affected by vibration, shock or low frequency wind noise. Omni-directional frequency response substantially flat from 30 to 7000 c.p.s. Recommended load resistance not less than 1 megohm dependent on low frequency response. Can be supplied complete with switch and floor stand adaptor as required at a small extra cost.

## HIGH QUALITY MICROPHONE

Designed to meet even the most exacting requirements, this Microphone incorporates the world famous floating crystal sound cell construction. Its special characteristics are that its fine performance is not affected by vibration or shock. The fidelity is not impaired by low frequency wind noise.

### SPECIFICATION

Recommended load resistance—not less than 1 megohm.  
Output level —65 db ref. 1 volt/dyne/cm<sup>2</sup>.  
Frequency response—substantially flat from 30 c.p.s. to 10,000 c.p.s.  
Directivity—non-directional.  
Size—2½" spherical diameter.  
Connector—Standard international 3-pin.

### MIC 16



£24/19/6

## GENERAL PURPOSE MICROPHONE

### MIC 35



£2/15/-

substantially flat response from 50 to 5000 c.p.s.

### SPECIFICATION

Output level: —55 db ref. 1 volt/dyne/cm<sup>2</sup>.  
Cable—approx. 4 ft. of co-axial supplied.  
Weight—6 ozs. unpacked, 7 ozs. packed.  
Dimensions—microphone only 2¼" x 2¼" x ¾"

## TABLE AND STAND MICROPHONE

### MIC 22



This omni-directional Microphone is robust in construction, with a pleasing appearance. Vibration, shock or low frequency wind noise will not affect the performance. The low frequency cut-off is dependent on the load resistance. The cut-off is given by the quotation,  $F = 80 \div R$ , where  $F$  = c.p.s.,  $R$  = megohms. An adaptor (floor mounting) is available at low extra cost.

### SPECIFICATION

Output level = —50 db ref. 1 volt/dyne/cm<sup>2</sup>.  
Output impedance—equivalent to approximately 0.002 uF. (0.8 megohm at 100 cycles).  
Frequency response—substantially flat from 40 to 6000 c.p.s.

Recommended load resistance—not less than 1 megohm, dependent on low frequency response.

£9/18/6

## LAPEL MICROPHONE

### MIC 28



£5/19/6

Designed to give freedom of movement, this Microphone is small and non-directional. Housed in a soft moulded rubber case, which gives protection against shock, it is provided with a pin at the rear of the case for pinning to the lapel.

### SPECIFICATION

Output level—approx. —55 db ref. 1 volt/dyne/cm<sup>2</sup>.  
Recommended load resistance—5 megohms.  
Frequency response—level throughout the whole of the audible spectrum.  
Capacity—0.0015 uF. at 1000 c.p.s.  
Impedance—100,000 ohms at 1000 c.p.s.  
Cord—6 ft. shielded cable.  
Size—1-9/16" wide x 2¼" long x ¾" thick.

## HAND OR DESK MICROPHONE

### MIC 33



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This Microphone has been designed for the high quality public address and home recording field. High sensitivity and flat characteristics are obtained by a specially designed acoustic filter. Housed in an attractive plastic case with an unexcelled response for its size and price. Unaffected by vibration, shock or low frequency wind noise. Omni-directional frequency response substantially flat from 30 to 7000 c.p.s.

## MICROPHONE INSERTS



(MIC 32 illustrated)

## CRYSTAL MICROPHONE INSERTS

These inserts are available in varying sizes ranging from as small as 15/16" square to 1-13/16" round, with various thicknesses from 7/32" to 9/16". Suitable for every purpose such as hearing aids, public address, tape recording, amateur broadcasting, etc., they have responses from 2250 c.p.s. to 3500 c.p.s. at 5 db to 30 db. Insert can be supplied with or without 10 meg. resistor as required.

MIC 32 insert, £2/15/6; all others, £1/19/6.

## MICROPHONE INSERTS



(MIC 23 illustrated)

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# FEDERAL, QSL, and VISUAL NOTES

## FEDERAL

### MEMBERS OF ADVISORY COMMITTEES FOR 1955

The following Amateurs have been appointed to the Amateur Advisory Committees for 1955:

**New South Wales**  
Messrs. G. T. Bay (VK2GT), N. MacNaghten (VK2ZH), R. W. Patterson (VK2AJW), J. C. Pinnell (VK2ZR), L. H. Taylor (VK3CL), V. H. Wilson (VK3V).

**Victoria**  
Messrs. R. A. Anderson (VK3WY), A. L. Brehaut (VK3SB), C. R. Gibson (VK3FO), G. W. Manning (VK3XJ).

**Queensland**  
Messrs. J. G. Elex (VK4FN), G. Harmer (VK4XW), A. Harris (VK4TH), H. T. Hewitt (VK4PD), L. E. H. Mallinson (VK4LM), J. F. Pickles (VK4PF).

**South Australia**  
Messrs. B. W. Austin (VK3CA), A. H. Dodridge (VK5CD), A. S. Little (VK5AF), H. K. R. Sacey (VK3KA), C. D. L. Tilbrook (VK5GL), D. R. Whitburn (VK5BY).

**Western Australia**  
Messrs. W. J. Howse (VK6ZAA), N. F. O'Gara (VK6NF), E. Rumble (VK6B), Savory (VK6TF), F. T. Tredrea (VK6FT), F. H. Turner (VK6UF).

**Tasmania**  
Messrs. R. M. Barker (VK7MR), A. Hubbard (VK7KA), M. H. Hurburch (VK7MH), L. R. Jensen (VK7LJ), P. T. Moore (VK7FM), R. D. O'May (VK7OM).

### LIST OF SUCCESSFUL AMATEUR CANDIDATES

The following is a list of candidates who were successful at the examination for the Amateur Operator's Certificate and Amateur Operator's Limited Certificate, held on 11th January, 1955:

**New South Wales**  
\*R. N. North, Gladstone Street, Bathurst.  
\*B. B. Jones, P.O. Box 231, Griffith.  
\*G. Harriman, Farm 1850, Lake Wyangan, Griffith.

\*W. O. 15 Morgan Street, Petersham.  
\*B. Holland, 9 Downshire Parade, Chester Hill.  
\*A. D. Nutt, 12 Austral Bldg., Anzac Parade.

\*K. S. Powell, Lot 76, Kanooka Street, Carlingbah.

**Victoria**  
J. Spark, 20 Marshall Avenue, Moe.  
D. J. Hall, Nullawarre, via Allansford.  
H. Drislowicz (name changed by Deed Poll to D. Denver), 9 Reid St., Murrumbidgee.

\*P. Everett, 95 Victoria St., Warragool.  
\*A. J. Bowman, 476 Nepean Highway, Frankston.

\*W. I. Dawson, 14 Tait Street, Footscray.  
\*A. F. Elliott, 31 Fenton Street, Ascot Vale.  
\*B. Heinz, Liverpool Road, Kilsyth.

\*I. R. Woodman, 24 Fewster Road, Hampton.

**Queensland**  
E. J. Leather, Jefferson Lane, Palm Beach.

**South Australia**  
\*J. A. Gibbs, 209 Hutt Street, Adelaide.  
\*A. Tidy, 49 Balcombe Ave., Findon, West.  
\*A. L. West, 10a Alexander Avenue, Ashford.

**Western Australia**  
\*R. F. Elms, 131 Shepperton Rd., Victoria Park.  
\*T. S. Long, 27 Armadale Cres., Mt. Lawley.

**Tasmania**  
\*G. S. Jennings, P. O. Box 210, Queenstown (address now 35 Royal Pde., Parkville, Victoria).

\* Qualified for Limited Certificate.

### AMENDMENTS TO THE FEDERAL CONSTITUTION

Under the direction of the Federal Council of the Wireless Association of Australia, the Federal Executive hereby gives notice that it is intended to alter the Federal Constitution (1947) of the W.A. as follows:

Section 29, by inserting after the words "The Tasmanian Division," the words "The Papua-New Guinea Division."  
Section 30, by inserting immediately after the word "Proficiency," the words "or Limited Amateur Operator's Certificate of Proficiency."

### FEDERAL QSL BUREAU

RAY JONES, VK3IR, MANAGER

Rob SRG reports having the first QSO with VK3EM at Mawson. Eric stated that conditions for QSOs with Australia have been very bad

and that SRG was the only VK heard to end of March. In an interesting letter describing the trip down to Mawson and the short landing at the Vestfold Hills, Larsemann Hills and Sandefjord Bay, he mentions that as at end of February he had been more successful in the few days since his arrival at Mawson than he saw for the whole year while at Macquarie Island.

C. Peng, P.O. Box 48, Goeku, Ryukyu, writes seeking correspondence with Short Wave Listeners in Australia.

The new address of the QSL Bureau for Greece is: George N. Zarifis, 10 St. Fanourion Street, Pangrati, Athens, Greece.

The new address of the Irish Radio Transmitters Society QSL Bureau is: EIU, 14 Morris, 9 Shanrath Rd., Whitehall, Dublin, Eire.

Fag. of XINP, is back again around the same location and on the same vessel. This time he has a sister ship with him and the Amateur aboard is signing XINE. At time of QSO vessels were off Palm Passage, out north-east of Townsville, off the Barrier Reef.

Alan 3CX advises that anyone needing a QSL for QSO with CPBEX during 1951-52 may obtain same by writing TIBEX, West Westlake, care U.S. Civil Service Mission, U.S. Embassy, San Jose, Costa Rica.

The QSL Bureau address for Portugal is: R.E.I. Services, QSL, Rua D Pedro V, 7-4, Lisbon, Portugal.

Russell Fraser, ex-VK3IR, now resident near Sydney, advises that he still intends to QSL all contacts made while he was on Macquarie Island in 1953. There was no time like the present, Russ.

TA3EFA, which was much in evidence on DX bands in 1952, was operated near Izmit, Turkey, by Commander Sturkey, of U.S.N., whose present QTH is near Brandy Circle Falls Church, Va. U.S.A., and his present call is WAPAZ. His VL signs W4ETR. Both would welcome VK contacts.

BE3E says it is rumored that the prefix for the Tokelau Island is likely to be changed to ZK3 in lieu of ZM7 as at present.

Cards have commenced to arrive from VSSKU who operated 14 MC. on 50m from Seria, Brunei, at the latter end of 1954. His home call is GZKU. So far the cards received relate to contacts made in 1954 and 16 November last. "His topped that Ray carries on with the QSLs to the end of his period of operation in December, as writer has a personal interest in one of them.

## NEW SOUTH WALES

The Annual General Meeting of the Wireless Institute (N.S.W. Division) was held at Science House, Gloucester Street, on Friday, 29th March, before a very large gathering. The President, J. Corbin, 2YC, took the chair and welcomed members and visitors present. A report was given regarding the satisfactory progress of the Co-Operative, but it was stressed that more subscriptions are still needed and it is hoped that more members will subscribe to this organisation. "Please send all subscriptions as soon as possible to the Secretary."

The election of officers was conducted and resulted as follows: President, 2YL, 147; 2 Bruce, 2GT, 133; J. Corbin, 2YC, 147; 2 YBW, 143; D. Pollard, 2ASW, 140; C. Quin, 2AYW, 132; B. White, 2AAB, 131; R. Williams, 2ARW, 142; G. Wilson, 2AGW, 140; G. Smith, 2AOJ, 63. The first named seven of these candidates are thus elected for the coming year.

Following the election of officers, there was a spirited discussion on all aspects of the part played by Amateur Radio in the recent flood emergency and many angles were presented for further study by Council, where these matters will be deliberated and in turn presented at a subsequent meeting as a motion which can be followed in such an emergency. Council will welcome any further comment country members may have on the matter.

The meeting concluded at about 10.45 p.m. and a recording was played by members.

## SILENT KEY

It is with deep regret that we record the passing of:—  
VK2DG—Keith Rudkin.  
VK5CR—Charlie Cheel. 1st April, 1955.

VK7MR—Murray Richards. 4th April, 1955.

description by the operator, Norm Casey, of his difficulties in establishing the Gunnedah Flood Control Station.

## BAND JOTTINGS

At this season of the year it is found that there is a slight exodus to Urunga, on the North Coast, N.S.W., and on the occasion of the North Coast and Tablelands Convention in a setting of this beautiful part of the State. Much of the time of the recent disastrous floods, there will be many regular attenders who will be too busy to attend the Convention. At the same time to have a large gathering of successful Convention. Zone Officer, Noel 2AHH, has been in hospital recently, suffered an operation for appendicitis, but at the time of writing states that he is much improved in health and will most certainly be taking his part in the big event towards which he has done so much work.

More notes from the North Coast state that Alb 2JC has also had a spell in hospital and we hope that he is also doing well. 2SR has been operating portable from Yamba while on holidays and has now returned to the home town. 2AGM takes up duties at Lismore Exchange, so more will be heard from there. Blue 2AUK is still applying for a very busy boy, 2HCG from Quirindi is very busy boy, has literally miles of fencing down following the floods and is now getting organised. 2VT is searching for a place to set up a station, a sign down here and to most parts for that matter. 2YU from Tamworth, who formed a valuable link between the two areas, expects to make the trip to Urunga also as many others from that area. Nothing heard of late from 2APS, but was in the big smoke recently. 2ADW is still in hospital, but says that Charlie and Doc 2LH are spending a lot of time on the seaboard. 2RK, Murrumbidgee, we have no news of him as yet, but hope that all is well with him there and the same old Charlie at Kyogle. Wish you fellows would drop us a line some time.

2YU is very busy with one thing and another, will all be at the Convention. 2D has been busy tying up the loose ends and has been assisted at this end by 2FH in no mean manner. 2LH has a new station, set up by 2YU by Duck and since he is in the Forces, has a real story to tell; thanks for the letter Leith. Terry 2AJJ supplies a spot supply of beer, thanks Terry; is doing well up at Grafton as is 2OK and the rest of the boys.

From Suburban Sydney we do not have reports normally excepting a note sent by 2LH but this month we have received a nice note from Vic 2AWN reporting on a function held recently at the home of Bill 2AFL. Bill and his understanding wife recently held a combined new QTH warning and "welcome home" party to that very popular new countryman—Len 90R—and his charming XYL who are back in Sydney on leave. Len of course will be remembered as 2AOK. A number of local Amateurs and Leith XYL and XYL enjoyed Bill and Phyll's hospitality and learnt a lot from Len and Jean of Norfolk Island. According to Jean, Norfolk Island is a Paradise—no more. One thing about N.I. Island, from the Amateur's point of view is its popularity in the DX world. Jean has started a valuable collection of DX cards and is anxious to be valuable in about 299 years time. You should be able to retire on the proceeds of the sale Jan.

Len's first prize to the W boys for organised working of his station. According to Len, they queue up one behind the other and do just the right thing at the right time. I dare not tell you his nomination for the rudest country representative—no names—no peace drill. A very enjoyable evening was had by all. Bill and Phyll are now at No. 1 host and hostess as organisers. On behalf of the guests, thanks Bill, thanks Phyll. Bill and Phyll will travel by ship to Lemon B.C.I., but gets around a bit at the same time. 2AKV will be in Sydney again, possibly will see the show. 2YU will travel to the Sydney Showground for the duration of the Easter Show and will be making many contacts on 40 and 20 m. George 2AUR is going to make a hurried trip to Geraldton, speaks Malay quite fluently also. 2APT takes on a new job, wish you luck Jack in the new sphere, we who have been stuck in the mud salesman like George? Bert 2AGW hears and works the DX very frequently, may possibly have new location soon. Barry 2AAB, a new member of Council, did sailing work in operating 2WI; has headed north and will finish up at Urunga. 2ASW also has the same

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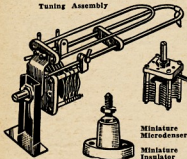




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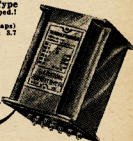
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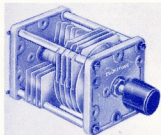
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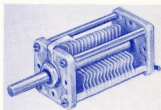
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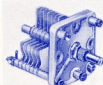
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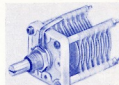
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